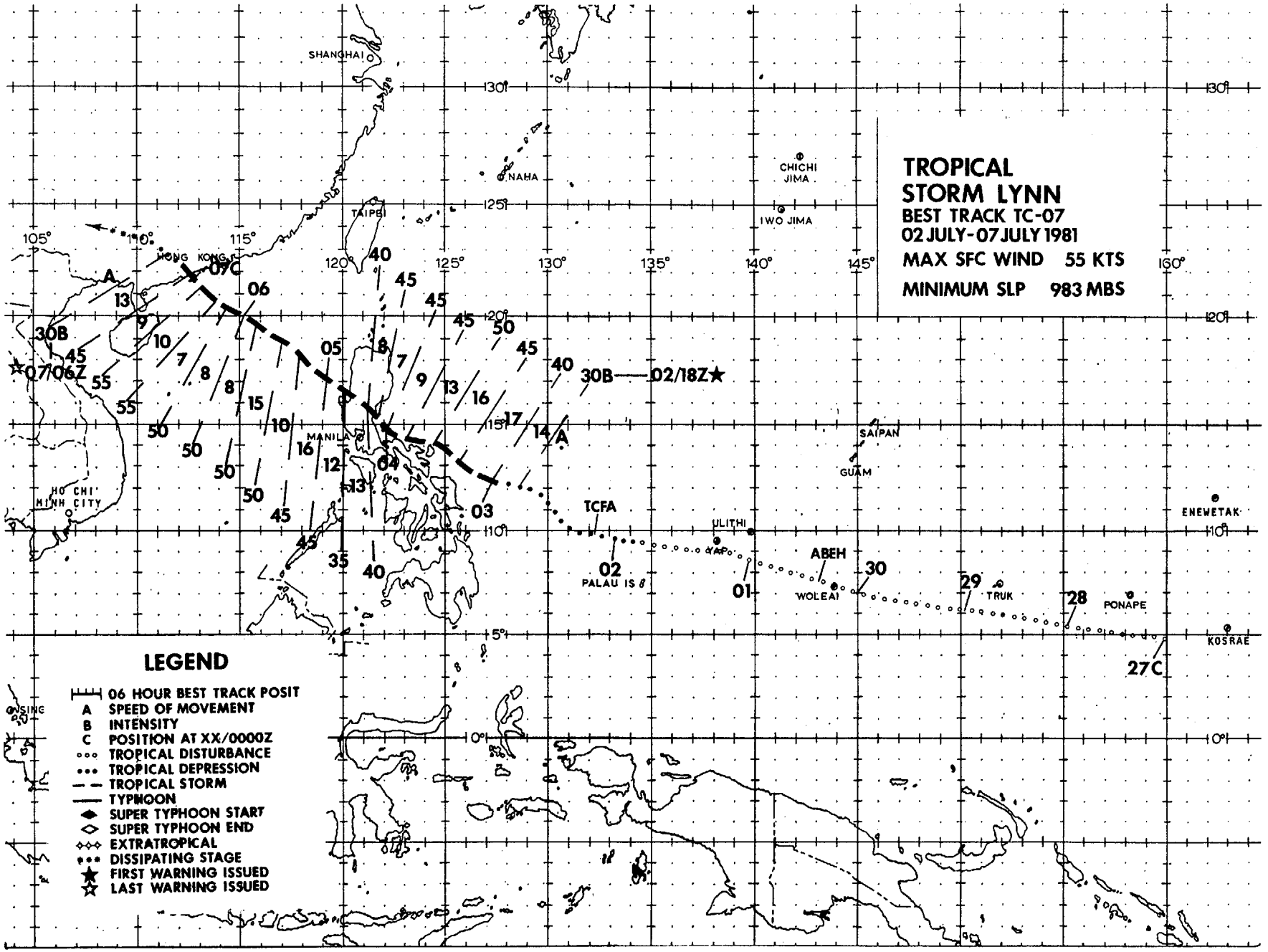
TROPICAL
STORM LYNN
BEST TRACK TC-07
02 JULY-07 JULY 1981
MAX SFC WIND 55 KTS
MINIMUM SLP 983 MBS
LEGEND
06 HOUR BEST TRACK POSIT
A SPEED OF MOVEMENT
B INTENSITY
C POSITION AT XX/0000Z
TROPICAL DISTURBANCE
TROPICAL DEPRESSION
TROPICAL STORM
TYPHOON
SUPER TYPHOON START
SUPER TYPHOON END
EXTRATROPICAL
DISSIPATING STAGE
FIRST WARNING ISSUED
LAST WARNING ISSUED
SHANGHAI
NAHA
CHICHI JIMA
IWO JIMA
TAIPEI
HONG KONG
MANILA
HO CHI MINH CITY
SAIPAN
GUAM
ULITHI
YAP
ABEH
WOLEAI
TRUK
PONAPE
KOSRAE
ENEWETAK
PALAU IS
TCFA
07C
30B
07/06Z
30B 02/18Z
27C

Following on the heels of Typhoon Kelly, Tropical Storm Lynn was the second storm in three days to devastate the Philippine Islands. Packing winds of 45-50 kt (23-26 m/sec), Lynn's 30 hour track across the northern Philippine Islands brought torrential rains and accompanying mud slides leaving 18 persons dead and some tens of thousands homeless.

Lynn was first detected on satellite imagery at 270000Z as an area of enhanced convection just south of Ponape. This area was part of a weak equatorial trough that extended from Ponape northwestward to just southwest of Guam, where a second active convection area existed that later became Typhoon Kelly. A broad scale upper level divergent pattern existed over the entire region south of a Tropical Upper Tropospheric Trough (TUTT) located near 15N 160E.

During the next several days both disturbances tracked westward under the influence of the mid-to-lower-tropospheric westerly current south of the subtropical ridge. While the disturbance near Guam eventually intensified to Tropical Storm Kelly, the disturbance near Ponape continued to show marked variations in its convective activity, due in part to the degree of vertical wind shear that existed over the disturbance. Although synoptic data indicated a 1010 mb surface low as early as 291200Z, an analysis of 200 mb satellite-derived winds between 270000Z June and 020000Z July indicated that the north-south flow across the disturbance varied from as little as 10 kt (5 m/sec) to as great as 35 kt (18 m/sec). This large shearing effect appeared to prevent any significant development of the disturbance during this period.

By 020000Z the upper trough had extended westward to a position just to the northeast of Kelly in the South China Sea and a TUTT cell observed near 20N 128E finally blocked the strong shearing pattern (Fig. 3-07-1). A Tropical Cyclone Formation Alert (TCFA) was issued at 020300Z when an upper-level anticyclone could finally be identified over the disturbance. Development was still expected to continue slowly since satellite imagery did not indicate a strong central convective region. Aircraft reconnaissance at 020530Z could only detect a weakly organized 1005 mb circulation pattern.

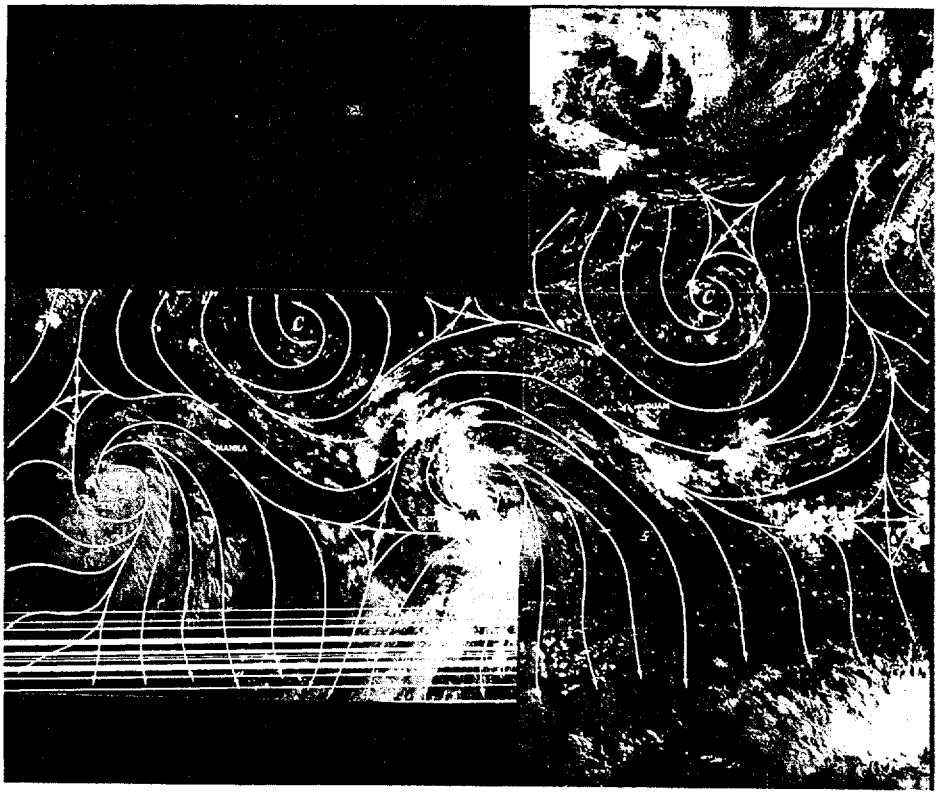

Figure 3-07-1. 020000Z July 1981, 200 mb streamline analysis superimposed on satellite pictures at 012155Z and 012336Z. This figure depicts the TUTT cells in relationship to the developing storms Kelly and Lynn. (NOAA 6 visual imagery)

By 021800Z satellite imagery indicated a much improved central convective region and the first warning was issued. Seven hours later at 030100Z aircraft reconnaissance found that Lynn had already reached tropical storm strength with 40 kt (21 m/sec) surface winds and a minimum sea level pressure of 998 mb.

As Lynn skirted the northern edge of the eastern Philippine Islands, she abruptly slowed from 16 to 7 kt (30-13 km/hr). This was partially due to the disruption of Lynn's circulation pattern over the mountainous terrain of the Philippines and the slight northern retreat of the 500 mb high which temporarily slackened the steering flow across the storm. Also during this time, a large influx of moisture from the South China Sea caused a massive build-up a tropical depression, with an intensity of 30 kts (15 m/sec) and a central pressure of 997 mb, and the final warning was issued.

of cloudiness along Lynn's southern periphery which, in turn, caused Lynn's circular convective pattern to become distorted. This made it very difficult to locate Lynn with satellite imagery. It was not until 040600Z, when a strong central dense overcast (CDO) had developed (Arnold, 1974) just east of Luzon, that Lynn could again be tracked reliably. Figure 3-07-2 shows Tropical Storm Lynn and her CDO just after she made landfall near Baler, Luzon (WMO 98333).

With the formation of the CDO, Lynn appeared to have gained back some of the organization that she had prior to reaching the Philippines. This seems to have enabled the storm to be more easily advected in the steering flow as Lynn quickly increased her speed to 13 kt (24 km/hr).

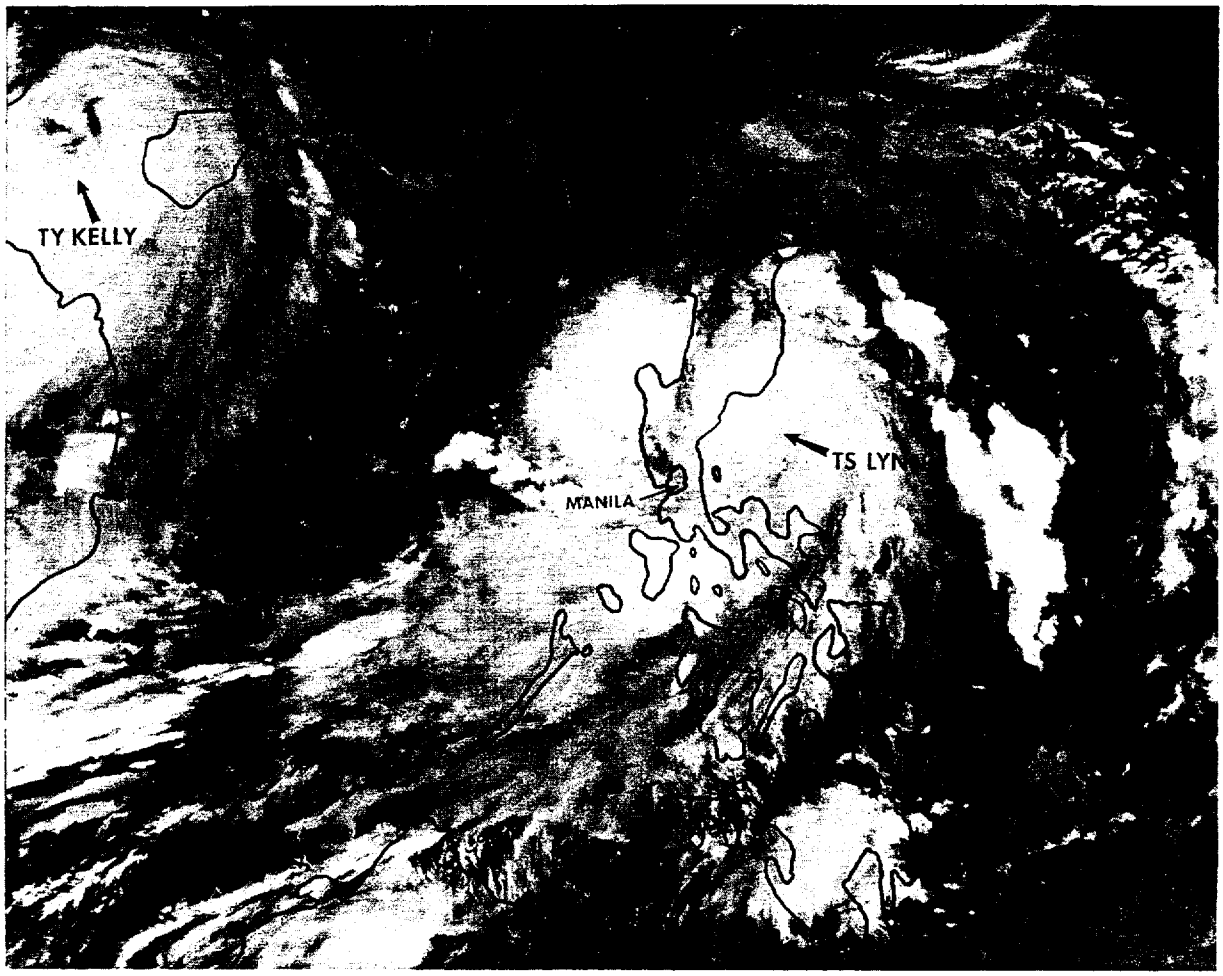

Figure 3-07-2. Tropical Storm Lynn just after reaching the coast of Luzon at 4 July 1981, 1129Z. Note Lynn's strong central convective area as well as the deep layer of cloudiness along her southern periphery. Typhoon Kelly can be seen approaching the coast of Vietnam. (NOAA 6 infrared imagery)

With her speed increased, Lynn lost little of her intensity while crossing the island of Luzon in less than six hours. From Luzon, Lynn followed a fairly climatological northwest track across the South China Sea. JTWC had very little trouble predicting her direction of movement as the 500 mb high over Asia was now 100 m higher than it had been a week prior with Typhoon Kelly.

Like Kelly before her, Lynn was predicted to become a minimum strength typhoon once she reached the central South China Sea. However, with the increase in strength of the Asiatic high, the flow at 200 mb also increased. By 051200Z, Lynn had reached a position just north of where Kelly obtained typhoon strength. As can be seen in Figure 3-07-3, Lynn's outflow was restricted in her northwest quadrant as 70 kt (36 m/sec) easterlies were observed only 420 nm (778 km) north of the storm. It was not until just prior to making landfall on the south China coast that the easterly winds north of the storm abated to only 20 kt (10 m/sec) and satellite imagery indicated that Lynn's outflow had improved. By this time there was little room for much intensificantion.

Lynn finally made landfall near Shang-Chuan-Tao, China (WMO 59673) at 062200Z 90 nm (167 km) west-southwest of Hong Kong. Maximum sustained surface winds at landfall were estimated to be near 55 kt (28 m/sec) with a central pressure of 983 mb.

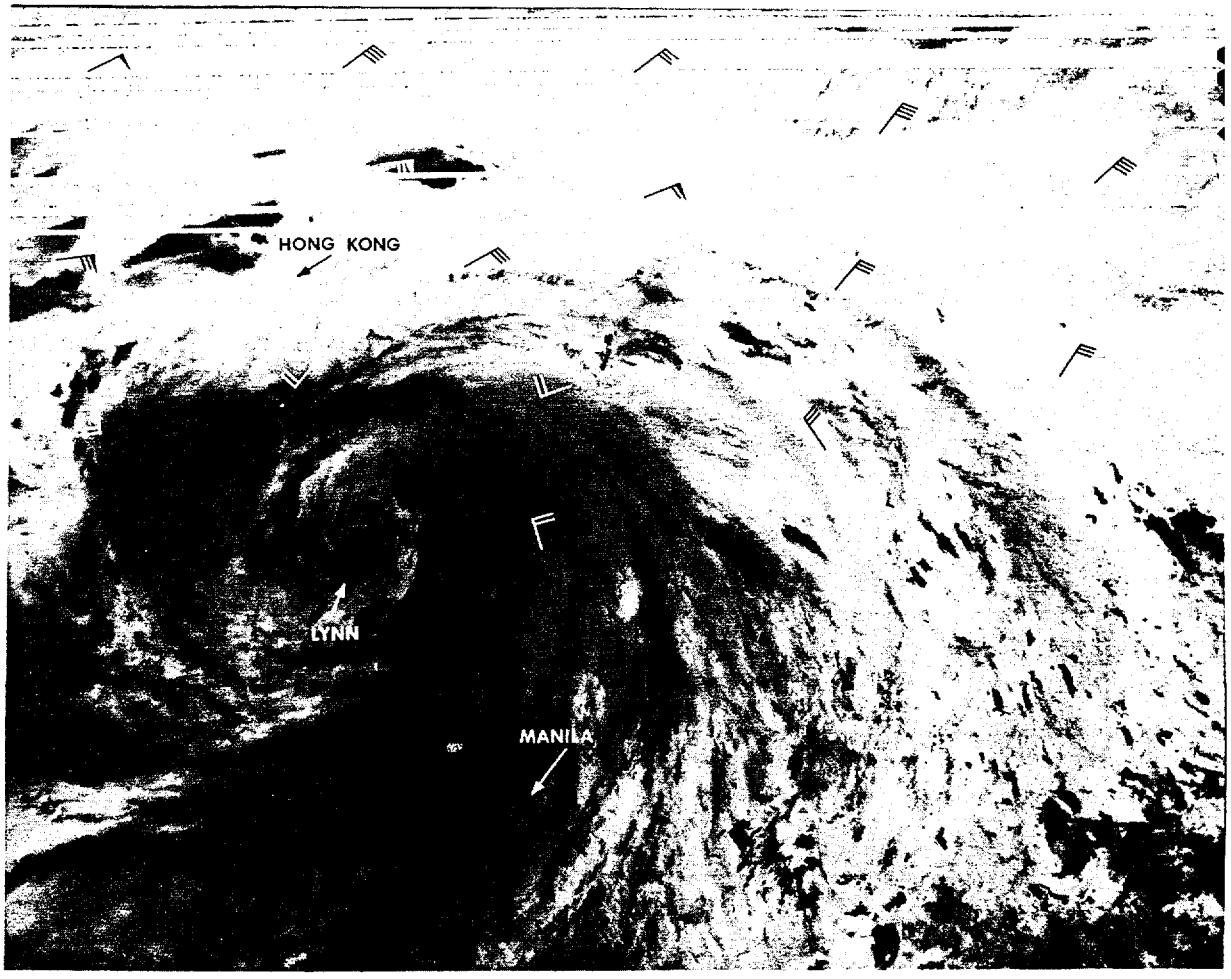

Figure 3-07-3. Tropical Storm Lynn in the South China Sea at 5 July, 1106Z. Strong upper-level flow north of the storm has restricted Lynn's outflow in her northwest quadrant. Wind barbs represent aircraft and rawinsonde reports near the 200 mb level at 051200Z. (NOAA 6 infrared imagery)